

Amar Sewa Mandal's  
Kamla Nehru College of Pharmacy, Biutibori, Nagpur

**Course Outcomes 2020-21**

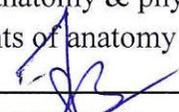
Program code	Program Name	Course code	Course Name	Year of introduction	Course Outcomes
Bpharm	Semester I	BP101T	Human Anatomy and Physiology I-Theory	2017-18	<p>Upon completion of this course the student should be able to</p> <ol style="list-style-type: none"> <li>1. Define and explain the anatomy and physiology, various levels of organizations basic homeostatic mechanism.</li> <li>2. Explain the morphology, physiology of skeletal system along with the physiology of muscle contraction in co-ordination with the joints, their articulation and skin.</li> <li>3. Explain and describe the composition, function of various body fluids like blood and lymph, their significance and related disorders.</li> <li>4. Classify the peripheral nervous system, nerves and morphology of special senses.</li> <li>5. Explain the anatomy and physiology and parameters related to CVS and related</li> </ol>
Bpharm		BP102T	Pharmaceutical Analysis I-Theory	2017-18	<p>Upon completion of the course student shall be able to</p> <ol style="list-style-type: none"> <li>1. To understand the principles of volumetric and gravimetric analytical techniques</li> <li>2. To gain knowledge of sources of errors and minimizing techniques.</li> <li>3. To analyze the techniques of volumetric and gravimetric analysis.</li> <li>4. To explain about accuracy, precision and significant figure error concepts</li> <li>5. To compute analytical results and understand the physiochemical concepts of analysis, theories of acids and bases, stoichiometry etc.,</li> </ol>



  
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Bpharm	BP103T	Pharmaceutics I – Theory	2017-18	<p>Upon completion of this course the student should be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the history and development of pharmacy profession and to know the pharmacopoeias and various to Dosage forms.</li> <li>2: Understand the prescription and its handling, posology and drug doses calculations.</li> <li>3: Understand Pharmaceutical calculations, systems of weights and measures and solid dosage and semisolid dosage forms with respective to definitions, classification, excipients, preparations and applications.</li> <li>4: Understand pharmaceutical Monophasic and biphasic liquid dosage forms and incompatibilities.</li> <li>5: Prepare solid and semisolid dosage forms.</li> </ol>
Bpharm	BP104T	Pharmaceutical Inorganic Chemistry –Theory	2017-18	<p>Upon the completion of the course student shall be able to:</p> <ol style="list-style-type: none"> <li>1. Apply the knowledge of sources of impurities and different methods to identify them in inorganic pharmaceuticals.</li> <li>2 Write and explain about methods of preparation of inorganic pharmaceuticals.</li> <li>3. Write and explain about methods for identification and purity testing of inorganic pharmaceuticals</li> <li>4. Discuss the role of inorganic pharmaceuticals in diagnosis of different diseases.</li> <li>5. Write about uses of inorganic pharmaceuticals treatment of different ailments.</li> <li>6. Explain the pharmaceutical uses of radiopharmaceuticals in diagnosis and</li> </ol>
Bpharm	BP105T	Communication skills – Theory *	2017-18	<p>Upon completion of the course the student shall be able to</p> <ol style="list-style-type: none"> <li>1. Understand the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceutical operation</li> <li>2. Communicate effectively (Verbal and Non Verbal)</li> <li>3. Effectively manage the team as a team player</li> <li>4. Develop interview skills</li> <li>5. Develop Leadership qualities and essentials</li> </ol>
Bpharm	BP106RB T	Remedial Biology/	2017-18	<p>Upon completion of the course, the student shall be able to</p> <ol style="list-style-type: none"> <li>1. know the classification and salient features of five kingdoms of life</li> <li>2. understand the basic components of anatomy &amp; physiology of plant</li> <li>3. know understand the basic components of anatomy &amp; physiology animal with special reference to human</li> </ol>



  
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Bpharm		BP106RM T	Remedial Mathematics – Theory*	2017-18	Upon completion of the course the student shall be able to:- 1. Know the theory and their application in Pharmacy 2. Solve the different types of problems by applying theory 3. Appreciate the important application of mathematics in Pharmacy
Bpharm	Semester II	BP201T	Human Anatomy and Physiology II – Theory	2017-18	Upon completion of this course the student should be able to: 1. Explain the anatomy and physiology and parameters related to digestive system and related disorders. 2. Explain the anatomy and physiology and parameters related to nervous system and ANS. 3. Explain the anatomy and physiology and parameters related to Urinary system. 4. Explain the morphology of special senses. 5. Explain the anatomy and physiology and parameters related to Integumentary system.
Bpharm		BP202T	Pharmaceutical Organic Chemistry I – Theory	2017-18	Upon completion of the course the student shall be able to 1. Explain Hybridization and physical properties of organic compound 2. Identify the elemental proportion of organic compound 3. Write the structure, name and the type of isomerism of the organic compound 4. Understand the Stereochemistry of Organic compound 5. Know the types of Organic Reactions 6. Learn factor affecting Organic reactions
Bpharm		BP203T	Biochemistry – Theory	2017-18	Upon completion of course student shall be able to 1. Explain the various biomolecules along with classification.. 2. Describe the metabolism of biomolecules, energy production and utilization during the biochemical reactions. 3. Describe the importance and role of cyclic pathway and also the energy generation and utilization phase. 4. Describe the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins. 5. Biological oxidation, various biocatalysts, electron transport chain the biological significances of ATP and cyclic AMP. 6. Explain the catalytic role of enzymes, importance of enzyme inhibitors in design of new drug, therapeutic and diagnostic application of enzymes.
Bpharm		BP204T	Pathophysiology – Theory	2017-18	Upon completion of the subject student shall be able to – 1. Describe the etiology and pathogenesis of the selected diseases. 2. Name the signs and symptoms of the diseases. 3. Mention the complications of the diseases.



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Bpharm		BP205T	Computer Applications in Pharmacy – Theory *	2017-18	Upon completion of the course the student shall be able to 1. know the various types of application of computers in pharmacy 2. know the various types of databases 3. know the various applications of databases in pharmacy 1. know the various types of application of computers in pharmacy 2. know the various types of databases 3. know the various applications of databases in pharmacy
Bpharm		BP206T	Environmental sciences – Theory *	2017-18	Upon completion of the course the student shall be able to: 1. Create the awareness about environmental problems among learners. 2. Impart basic knowledge about the environment and its allied problems. 3. Develop an attitude of concern for the environment. 4. Motivate learner to participate in environment protection and environment improvement. 5. Acquire skills to help the concerned individuals in identifying and solving environmental problems. 6. Strive to attain harmony with Nature.
Bpharm	Semester III	BP301T	Pharmaceutical Organic Chemistry II – Theory	2017-18	Upon completion of the course the student shall be able to 1. Explain the preparation of various Organic Compounds 2. Write reactions of various Organic Compounds 3. Understand the various reaction mechanisms 4. Know the role stereochemistry in different reaction mechanisms 5. Propose the orientation of various reaction mechanisms 6. Identify the different classes of Organic Compounds
Bpharm		BP302T	Physical Pharmaceutics I – Theory	2017-18	Upon the completion of the course student shall be able to 1. Describe the importance of particle size analysis and their application in pharmaceutical science 2. Demonstrate the importance and significance of surface and interfacial tens in stabilization of dosage form 3. Explain surfactants and its significance 4. Apply the knowledge of theoretical and thermodynamic consideration in formulations 5. Enumerate properties of colloids and their applications



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Bpharm		BP303T	Pharmaceutical Microbiology – Theory	2017-18	Upon completion of the subject student shall be able to; 1. Understand methods of identification, cultivation and preservation of various microorganisms 2. To understand the importance and implementation of sterilization in pharmaceutical processing and industry 3. Learn sterility testing of pharmaceutical products. 4. Carried out microbiological standardization of Pharmaceuticals. 5. Understand the cell culture technology and its applications in pharmaceutical industries.
Bpharm		BP304T	Pharmaceutical Engineering – Theory	2017-18	Upon completion of the course student shall be able: 1. To know various unit operations used in Pharmaceutical industries. 2. To understand the material handling techniques. 3. To perform various processes involved in pharmaceutical manufacturing process. 4. To carry out various test to prevent environmental pollution. 5. To appreciate and comprehend significance of plant lay out design for optimum use of resources. 6. To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries.
Bpharm	Semester IV	BP401T	Pharmaceutical Organic Chemistry III– Theory	2017-18	At the end of the course, the student shall be able to 1. Write the structure, name and the type of isomerism of the organic compound 2. Explain the Stereochemistry of Organic Compounds reactions 3. Write the reaction, mechanism of reaction and application of name reactions 4. Understand the various classes of heterocyclic compounds 5. Account for synthesis and reactions of various heterocyclic compounds 6. Apprehend the medicinal uses of Heterocyclic compounds



  
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Bpharm	BP402T	Medicinal Chemistry I – Theory	2017-18	<p>Upon completion of the course the student shall be able</p> <ol style="list-style-type: none"> <li>1.to introduce and discuss history and development of medicinal chemistry</li> <li>2. to classify , draw structures and outline the synthetic route of important drugs acting on autonomic nervous system, central nervous system, narcotic and non narcotic drugs..</li> <li>3.to write chemistry,structure activity relationships, mechanism of action and therapeutic value of drugs belonging to class autonomic nervous system,central nervous system, narcotic and non narcotic drugs.</li> <li>4. to narrate the importance ofphysicochemical properties and metabolism of drugs.</li> </ol>
Bpharm	BP403T	Physical Pharmaceutics II – Theory	2017-18	<p>Upon the completion of the course student shall be able to</p> <ol style="list-style-type: none"> <li>1. Understand the characterization, formulation and development of colloidal and coarse dispersion and enumerate properties of colloids and their applications in pharmaceutical sciences.</li> <li>2.Describe various rheological properties of pharmaceutical dispersed systems.</li> <li>3. Understand the particle size, size distribution distribution and importance of particle size analysis and their applications in pharmaceutical sciences.</li> <li>4. Enumerate principles of chemical kinetics and to use them for stability testing of pharmaceutical formulations.</li> </ol>
Bpharm	BP404T	Pharmacology I – Theory	2017-18	<p>Upon completion of this course the student should be able to</p> <ol style="list-style-type: none"> <li>1. Understand the pharmacological actions of different categories of drugs</li> <li>2. Enumerate different routes of drug administration in human beings and animals.</li> <li>3.Describe various pharmacokinetics parameters related to the fate of drug after administration.</li> <li>4. Explain the mechanism of drug action at organ system/sub cellular/macromolecular levels and biochemical aspects of drug action.</li> <li>5. Apply the basic pharmacological knowledge in the prevention and treatment of</li> </ol>
Bpharm	BP405T	Pharmacognosy and Phytochemistry I– Theory	2017-18	<p>Upon completion of the course, the student shall be able</p> <ol style="list-style-type: none"> <li>1. to know the techniques in the cultivation and production of crude drugs</li> <li>2. to know the crude drugs, their uses and chemical nature</li> <li>3. know the evaluation techniques for the herbal drugs</li> <li>4. to carry out the microscopic and morphological evaluation of crude drugs</li> </ol>



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B.Pharm	SEM ESTE R-V	BP501T	Medicinal Chemistry II	2017-18	Upon the completion of the course student will be able to: 1. to classify, draw structures and outline the synthetic route of important drugs, structure activity relationships, mechanism of action and therapeutic value of drugs acting on anti-histaminics. 2. to classify, draw structures and outline the synthetic route of important drugs, structure activity relationships, mechanism of action and therapeutic value of drugs acting on anti-neoplastic agents. 3. to classify, draw structures and outline the synthetic route of important drugs, structure activity relationships, mechanism of action and therapeutic value of drugs acting on cardio -vascular agents. 4. to classify, draw structures and outline the synthetic route of important drugs, structure activity relationships, mechanism of action and therapeutic value of drugs acting on endocrine system 5. to classify, draw structures and outline the synthetic route of important drugs, structure activity relationships, mechanism of action and therapeutic value of drugs acting on local anesthetics and antidiabetic agents
B.Pharm		BP. 502T	Industrial Pharmacy I	2017-18	Upon the completion of the course students will be able to: 1. Know the various Preformulation studies for pharmaceutical dosage forms development 2. Understand the formulation and characterization of tablets and liquid orals. 3. Understand and apply the formulation methods of capsules and pellets 4. Formulate and evaluate parenterals and ophthalmic dosage forms 5. Understand the concepts in formulation of cosmetics and aerosols and evaluate packaging materials
B.Pharm		BP 503.T	Pharmacology-III	2017-18	Upon the completion of the course student will be able to: 1. Understand the mechanism of drug action and its relevance in the treatment of different diseases. 2. Apply the pharmacological knowledge of drugs acting on cardiovascular system. 3. Describe various drugs acting on urinary system. 4. Explain the mechanism of autacoids' and related drugs. 5. Elaborate the role of drugs acting on endocrine system. 6. Observe the effect of drugs on animals by using various types of bioassay methods.



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B.Pharm		BP504T	Pharmacognosy II	2017-18	Upon the completion of the course student shall be able to: 1 Explain phytochemical aspects and biogenesis of various secondary metabolites 2 To know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents 3. To understand the herbal drug interactions 4 Elucidate the structure of phytoconstituents 5 Analyse herbal extracts for the presence of phytoconstituents 6 Discuss recent trends and advances in the field of Phytochemistry	1
B.Pharm		BP505T	Pharmaceutical Jurisprudence	2017-18	Upon the completion of the course student shall be able to: 1. Understand importance of Pharmaceutical legislations and their implications in the development of pharmaceutical profession. 2. Know various Indian pharmaceutical Acts and Laws. 3. To understand objectives, schedules, definitions and offences and penalties there with. 4. Explain the role of regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals 5. Know the code of ethics during the pharmaceutical practice.	1.
B.Pharm	SEM ESTE R-VI	BP601T	Medicinal Chemistry- III	2017-18	Upon the completion of the course student shall be able to: 1. To recall the classification and nomenclature of drugs of natural and synthetic origin. 2. To explain the concept of prodrugs and their importance. 3. To identify the mechanism of action and therapeutic uses of drugs. 4. To understand the relationship between structure of compound and its biological activity. 5. To draw the synthetic route for selected category of drugs as prescribed in the syllabus. 6. To discuss the approaches in drug design including QSAR, pharmacophore modeling, docking and combinatorial chemistry.	1.



  
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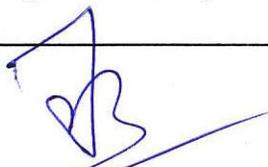
B.Pharm	BP602 T	PHARMACOLG Y-III	2017-18	Upon the completion of the course student will be able to: 1. Understand the mechanism of drug action and its relevance in the treatment of Respiratory system and GIT. 2. Apply the knowledge of classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications of Chemotherapeutics agents. 3. Describe the various pharmacological aspects of drugs acting on Immune system. 4. Comprehend the principles of toxicology and treatment of various poisonings and appreciate correlation of pharmacology with related medical sciences. 5. Explain and elaborate the aspects of Chronopharmacology
B.Pharm	BP 603 T.	HERBAL DRUG TECHNOLOGY	2017-18	Upon the completion of the course student will be able to: 1. Understand raw material as source of herbal drugs from cultivation to herbal drug product 2. Know the WHO and ICH guidelines for evaluation of herbal drugs 3. Know the herbal cosmetics, natural sweeteners, nutraceuticals 4. Appreciate patenting of herbal drugs, GMP.
B.Pharm	Bp. 604 T	Biopharmaceutics and Pharmacokinetics	2017-18	Upon the completion of the course student shall be able to: 1. Understand the basic concepts in biopharmaceutics and pharmacokinetics and their significance and describe the kinetics of drug absorption, distribution, 2. Apply the principle of pharmacokinetic process like metabolism, excretion, elimination. And Understand the concepts of bioavailability and bioequivalence of drug products and their significances 3. Understand various pharmacokinetic parameters, their significance & applications in compartment modelling 4. Apply the knowledge of pharmacokinetic principles in multicompartment models 5. Describe the non linear pharmacokintics



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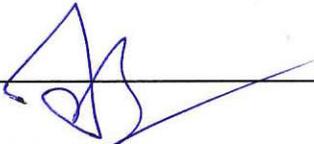
B.Pharm		BP605T	Pharmaceutical Biotechnology	2017-18	<p>Upon completion of the subject student shall be able to</p> <ol style="list-style-type: none"> <li>1. Understand tools and techniques of rDNA technology and also the importance of Immobilized enzymes in Pharmaceutical Industries.</li> <li>2. Describe the pharmaceutical production of recombinant proteins, insulin, growth hormones, interferon and monoclonal antibodies through application of rDNA technology.</li> <li>3. Explain the principle, detail the technique and application of plant and animal cell/ tissue culturing.</li> <li>4. Genetic engineering and its applications in relation to production of pharmaceuticals.</li> </ol>
B.Pharm		BP606T	Pharmaceutical quality assurance	2013	<p>Upon the completion of the course student shall be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the cGMP aspects in a pharmaceutical industry</li> <li>2. Appreciate the importance of documentation</li> <li>3. Prepare the documents in pharmaceutical industry</li> <li>4. Understand the scope of quality certifications applicable to pharmaceutical industries</li> <li>5. Understand the responsibilities of QA &amp; QC departments</li> <li>6. Carry out calibration of pH meter and qualification of UV-Visible spectrophotometer</li> </ol>
B.Pharm	SEM ESTE R-VII	BP701T	Instrumental Methods of Analysis	2017-18	<p>Upon the completion of the course student shall be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis</li> <li>2. Understand the chromatographic separation and analysis of drugs.</li> <li>3. Perform quantitative &amp; qualitative analysis of drugs using various analytical instruments</li> </ol>



  
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B.Pharm	BP702T	Industrial Pharmacy II	2017-18	<p>Upon the completion of the course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Define the process of pilot plant and scale up of pharmaceutical dosage forms.</li> <li>2. Interpret the process of technology transfer from lab scale to commercial batch.</li> <li>3. Know different Laws and Acts that regulate pharmaceutical industry.</li> <li>4. Understand the approval process and regulatory requirements for drug products.</li> <li>5. Acquire the knowledge of quality management systems used in pharmaceutical industry to build the quality in dosage forms.</li> <li>6. Understand the responsibilities and functions of Central and State Regulatory Authorities in India</li> </ol>
B.Pharm	BP 703T.	PHARMACY PRACTICE	2017-18	<p>Upon completion of course student shall be able to:</p> <ol style="list-style-type: none"> <li>1. To know various drug distribution methods in a hospital &amp; appreciate the pharmacy stores management and inventory control.</li> <li>2. To monitor drug therapy of patient through medication chart review and clinical review.</li> <li>3. To obtain medication history interview, counsel the patients and identify drug related problems.</li> <li>4. To detect and assess adverse drug reactions.</li> <li>5. To know pharmaceutical care services and appreciate the concept of Rational drug therapy.</li> </ol>
B.Pharm	BP704T	Novel Drug Delivery System	2017-18	<p>Upon completion of the subject student shall be able to</p> <ol style="list-style-type: none"> <li>1. Understand Terminologies, concepts and rationale related to controlled drug delivery systems along with the polymers.</li> <li>2. Understand Microencapsulation and gastroretentive like mucosal as well as implantable drug delivery systems.</li> <li>3. Understand Transdermal, ocular, nasopulmonary and intrauterine drug delivery systems.</li> <li>4. Targeted drug delivery systems.</li> </ol>



  
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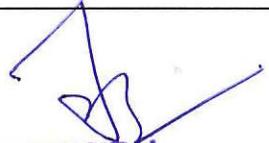
B.Pharm	SEM ESTE R- VIII	BP801T	Biostatistics and Research Methodology	2017-18	Upon completion of the subject student shall be able to 1. Understand the applications of Biostatics in Pharmacy. 2. Know the operation of M.S. Excel, SPSS, R and MINITAB® , DoE (Design of Experiment). 3. Deals with descriptive statistics, Graphics, Correlation, Regression, logistic regression Probability theory, Sampling technique, Parametric tests, Non Parametric tests, ANOVA. 4. Know the various statistical techniques to solve statistical problems. 5. Appreciate statistical techniques in solving the problems. 6. Analyzing the statistical data using Excel
B.Pharm		BP802T	Social and Preventive Pharmacy	2017-18	Upon completion of the subject student shall be able to Acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide. 2. Have a critical way of thinking based on current healthcare development. 3. Evaluate alternative ways of solving problems related to health and pharmaceutical issues
B.Pharm		BP803ET	Pharmaceutical Marketing	2017-18	Upon completion of the subject student shall be able to Understand the concept of Marketing. 2. To Know various techniques of Marketing. 3. To understand the application of marketing in pharmaceutical industry. 4. To differentiate various Emerging concepts in marketing such as Vertical & Horizontal Marketing, Rural Marketing, Consumerism, Industrial Marketing, and Global Marketing.
B.Pharm		BP. 809 T	Cosmetic Science	2017-18	Upon the completion of the course student will be able to: 1. Understand the regulatory concept of cosmetic formulation 2. Know the principles of building blocks of different cosmetics formulation 3. Describe the role of herbs in cosmetic formulations 4. Understand the evaluation of cosmetics Understand the problem of topical surface and remedies for these problems.



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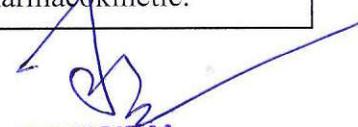
MPharm (MPh)	Semester I	MPH101T	Modern Pharmaceutical Analytical Techniques	2017-18	Upon the completion of the course student will be able to: 1.explain the principles of different instrumental methods used in analytical technique. 2.describe the instrumentation and its working used in various advanced analytical technique. 3.enumerate the applications of each analytical technique mentioned in syllabus. 4.Narrate the various immunological assays.
MPharm (MPh)		MPH102T	Drug Delivery System	2017-18	Upon completion of the subject student shall be able to 1.Understand the Principles & Fundamentals in development on novel drug delivery systems. 2.Understand the various approaches for development of novel drug delivery systems. 3.Understand the criteria for selection of drugs and polymers for the development of delivering system. 4.Understand the formulation and evaluation of Novel drug delivery systems...
MPharm (MPh)		MPH103T	Modern Pharmaceutics	2017-18	Upon completion of the course, student shall be able to understand 1.The elements of preformulation studies. The active pharmaceutical ingredients and generic drug product development 2.Concept behind optimization and parameters of optimization for the design of dosage form 3.Scope and merits of validation in dosage form development and qualification of instruments 4.GMP practices, industrial management, material management and TQM in pharmaceutical industry 5.Physics of compression and compaction profile during tableting process 6.Diffusion parameters, dissolution parameters, pharmacokinetic parameters, dissolution models and their statistical analysis



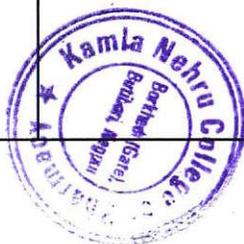
  
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MPharm (MPh)		MPH104T	Regulatory Affair	2017-18	<p>Upon completion of the course, it is expected that the students will be able to understand</p> <ol style="list-style-type: none"> <li>1. The Concepts of innovator and generic drugs, drug development process</li> <li>2. The Regulatory guidance's and guidelines for filing and approval process</li> <li>3. Preparation of Dossiers and their submission to regulatory agencies in different countries</li> <li>4. Post approval regulatory requirements for actives and drug products</li> <li>5. Submission of global documents in CTD/ eCTD formats</li> <li>6. Clinical trials requirements for approvals for conducting clinical trials</li> <li>7. Pharmacovigilance and process of monitoring in clinical trials.</li> </ol>
MPharm (MPh)	Semester II	MPH201T	Molecular Pharmaceutics(Nano Tech and Targeted DDS)	2017-18	<p>Upon completion of the course student shall be able to understand</p> <ol style="list-style-type: none"> <li>1. The various approaches for development of novel drug delivery systems.</li> <li>2. The criteria for selection of drugs and polymers for the development of NTDS</li> <li>3. The formulation and evaluation of novel drug delivery systems.</li> </ol>
MPharm (MPh)		MPH202T	Advanced Biopharmaceutics & Pharmacokinetics	2017-18	<p>Upon completion of the subject student shall be able to</p> <ol style="list-style-type: none"> <li>1. Understand the basic concepts in biopharmaceutics and pharmacokinetics.</li> <li>2. Understand the use raw data and derive the pharmacokinetic models and parameters the best describe the process of drug absorption, distribution, metabolism and elimination.</li> <li>3. Understand the critical evaluation of biopharmaceutic studies involving drug product equivalency.</li> <li>4. Understand the design and evaluation of dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters and potential clinical pharmacokinetic problems and application of basics of pharmacokinetic.</li> </ol>



  
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MPharm (MPh)		MPH203T	Computer Aided Drug Delivery System	2017-18	Upon completion of this course it is expected that students will be able to understand, 1. History of Computers in Pharmaceutical Research and Development 2. Computational Modeling of Drug Disposition 3. Computers in Preclinical Development 4. Optimization Techniques in Pharmaceutical Formulation 5. Computers in Market Analysis 6. Computers in Clinical Development 7. Artificial Intelligence (AI) and Robotics 8. Computational fluid dynamics(CFD)
MPharm (MPh)		MPH204T	Cosmetic and Cosmeceuticals	2017-18	Upon completion of the course, the students shall be able to understand 1. Key ingredients used in cosmetics and cosmeceuticals. 2. Key building blocks for various formulations. 3. Current technologies in the market 4. Various key ingredients and basic science to develop cosmetics and cosmeceuticals 5. Scientific knowledge to develop cosmetics and cosmeceuticals with desired Safety, stability, and efficacy.
MPharm (PC)	Semester I	MPC101T	Modern Pharmaceutical Analytical Techniques	2017-18	After completion of course student is able to know 1. Explain about different instrumental techniques 2. Apply the knowledge in identification of unknown compounds from the experimental data 3. Explain methods for analysis of various drugs in single and combination dosage forms 4. Explain in detail about separation Techniques 5. Discuss about gel electrophoresis techniques 6. Explain about thermal techniques in detail
MPharm (PC)		MPC1012T	Advanced Organic Chemistry -I	2017-18	Upon completion of course, the student shall be to understand 1. The principles and applications of retrosynthesis 2. The mechanism & applications of various named reactions 3. The concept of disconnection to develop synthetic routes for small target molecule. 4. The various catalysts used in organic reactions 5. The chemistry of heterocyclic compounds



  
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MPharm (PC)		MPC103T	Advanced Medicinal chemistry	2017-18	At completion of this course it is expected that students will be able to understand 1. To learn the different stages of drug discovery & role of medicinal chemistry in drug research. 2. To learn different techniques for drug discovery. 3. To understand various strategies to design and develop a new drug like molecules for biological targets and drug receptor concept. 4. To explain prodrug development and applications. 5. To know the structural activity relationship of the important class of drugs as prescribed in the syllabus. 6. To explain the types of Enzyme inhibition, peptidomimetics and its application in medicine.
MPharm (PC)		MPC104T	Chemistry of Natural Products	2017-18	Upon completion of course, the student shall be to understand 1. Different types of natural compounds and their chemistry and medicinal importance 2. The importance of natural compounds as lead molecules for new drug discovery 3. The concept of rDNA technology tool for new drug discovery 4. General methods of structural elucidation of compounds of natural origin 5. Isolation, purification and characterization of simple chemical constituents from natural source
MPharm (PC)	Semester II	MPC201T	Advanced Spectral Analysis	2017-18	At completion of this course it is expected that students will be able to understand- 1. Interpretation of the NMR, Mass and IR spectra of various organic compounds 2. Theoretical and practical skills of the hyphenated instruments 3. Identification of organic compounds
MPharm (PC)		MPC202T	Advanced Organic Chemistry -II	2017-18	Upon completion of course, the student shall able to understand 1. The principles and applications of Green chemistry 2. The concept of peptide chemistry. 3. The various catalysts used in organic reactions 4. The concept of stereochemistry and asymmetric synthesis.



  
**PRINCIPAL**

MPharm (PC)	MPC203T Computer Aided Drug Design	2017-18	At completion of this course it is expected that students will be able to understand 1. Role of CADD in drug discovery 2. Different CADD techniques and their applications 3. Various strategies to design and develop new drug like molecules. 4. Working with molecular modeling softwares to design new drug molecules 5. The in silico virtual screening protocols
MPharm (PC)	MPC204T Pharmaceutical Process Chemistry	2017-18	Upon completion of course, the student shall able to understand 1. The strategies of scale up process of apis and intermediates 2. The various unit operations and various reactions in process chemistry



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**PRINCIPAL**

**KAMLA NEHRU COLLEGE OF PHARMACY**  
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